

**The Impact of the Pandemic on German Academic IT Facilities in 2020.
Results of the Annual ZKI Survey on Trends at Academic IT Centres**

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Abstract

Academic IT centres throughout Europe and beyond were affected heavily by the consequences of the Covid-19 pandemic. In particular, teaching services and video conferencing tools had to be significantly enhanced and scaled immediately, while the impact on research IT was moderate, in comparison. In addition, after the Schrems II ruling of the European Court of Justice in June 2020, the situation was further complicated by the fact that the EU-US Privacy Shield was declared invalid. Therefore, tools and services by IT companies based in the US can hardly be used at state-funded universities in the EU without substantial negotiations with the vendors.

A survey across 94 academic institutions in Germany shows which aspects stand out and what priorities many of the German IT centres have set for this sudden, inevitable surge in digitalisation in 2020. The working group on “Strategy and Organisation” of the ZKI Association for German academic IT centres conducts an annual survey on the most important topics and focal points of member institutions. The survey takes up and documents the most relevant or trending issues of IT facilities from universities and research institutions. It is completed by CIOs, heads of data centres, IT directors and persons in comparable roles. The 2021 survey, carried out in December 2020 and January 2021, had an additional focus on the impact of the Covid-19 pandemic on IT institutions in 2020. The results might also shed light on the effects of the pandemic on academic IT facilities in other EU countries – or serve as a basis for differentiation.

The annual ZKI survey on trends at German academic IT centres is conducted since 2018. The number of participants has grown constantly over the years – with 94 academic institutions having completed the questionnaire of the current fourth survey carried out from December 2020 to January 2021.² For this 2021 edition of the survey, seven additional questions were included in the questionnaire under the separate heading “Focus topic: Impact of the pandemic on IT institutions”. These questions about the impact “on teaching services and technologies” or “home office support” were answered by more than half of the participants, which still gives quite an overview on the most relevant effects. The core survey with its more basic questions was completed by 80 to 90 institutions, on the average.

Overall, the results of the survey show an enormous acceleration in the implementation of new projects in IT institutions. Many institutions expect this trend to continue even after the end of the pandemic. The responses reveal a clear tension between the rapid provision of new services from the cloud, the compliance requirements of data protection and information security, and the resource requirements for on-site operations. In previous years, such strategic considerations on sourcing and operational architecture were hardly addressed. However, in this year's survey responses, these aspects are mentioned in almost all question categories.

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² Cf. Malte Dreyer (2021): Ergebnisse der ZKI Top-Trends-Umfrage des ZKI-Arbeitskreises Strategie und Organisation für das Jahr 2021. <https://doi.org/10.5281/zenodo.4530714>

See also for comparison: Malte Dreyer (2020). Ergebnisse der ZKI Top-Trends-Umfrage des ZKI-Arbeitskreises Strategie und Organisation für das Jahr 2020. <http://doi.org/10.5281/zenodo.3666168>; the HIS-Institut für Hochschulentwicklung (HIS-HE, institute for the development of higher education) conducted a more general survey among university leadership on the effects of the Covid-19 pandemic: Elke Bosse et al (2020): Corona@Hochschule – Befragung von Hochschulen zur (digitalen) Lehre. Download: <https://his-he.de/publikationen/detail/coronahochschule>.

The top trends in 2021 for the ZKI community are the topics:

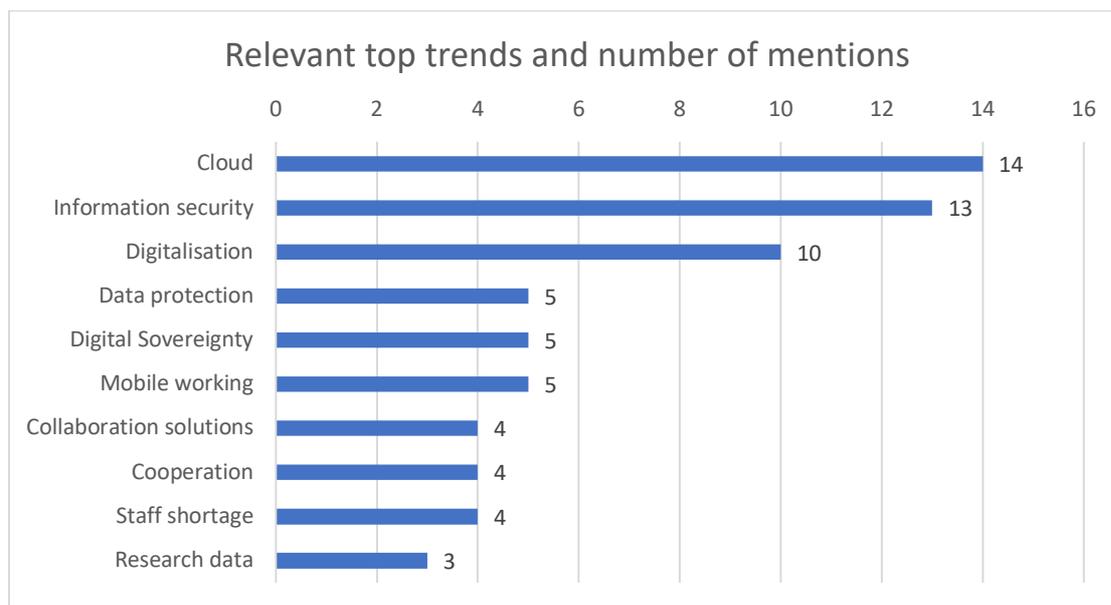


Figure 1: Relevant top trends and number of mentions

The survey asks on the one hand about general IT trends and on the other about trends that are particularly relevant for one's own institution (cf. Fig. 1). Among the general trends, the topics "cloud", "digitalisation" and "information security" are the top mentions – followed by "machine learning" and the topics "mobile working" and "digital sovereignty". The trends that are particularly relevant for the answering IT centres themselves are mostly identical, except for the topic of "machine learning", which generally appears in fourth place as a trend, but only in eleventh place among the topics in terms of relevance for the own institution. Instead, the topics "data protection" and "collaboration solutions" are also mentioned. "Digital sovereignty", "mobile working" and "collaboration solutions" had not previously been indicated as a trend in any of the ZKI Top Trends surveys and can therefore also be seen as direct effects of the pandemic. Particularly in context of the Schrems II ruling of the European Court of Justice from June 2020, "digital sovereignty"³ is understood to mean a complete reassessment of fundamental strategies of IT centres for the portfolio, procurement, configuration, compliance and operation.

Most higher education institutions have substantially enhanced the systems for online teaching and established new services during the last year. The IT facilities have taken on much more extensive tasks than before, especially in the areas of support and communication. Also, the rapid expansion of services and scaling has brought information security and data protection even further into focus. This has also led to improved cooperation in these areas.

The increased interest in the services is also accompanied by a higher expectation of the quality of the services and a closer exchange with the users. These effects have led to a clear dynamisation of digitalisation at the institutions. The extensive ad-hoc digitalisations could already be consolidated in approx. 37% of the institutions. In contrast, most institutions

³ Even independently of the Schrems II ruling, the topic of digital sovereignty or 'strategic autonomy' is of growing interest in Germany and even more so with regard to the European Union. Cf. Gabriele Goldacker (2017): Digitale Souveränität [White paper of Kompetenzzentrum Öffentliche IT (ÖFIT)]. <https://www.oeffentliche-it.de/documents/10181/14412/Digitale+Souveränität>; Resa Mohabbat Kar, Basanta E. P. Thapa (2020): Digitale Souveränität als strategische Autonomie – Umgang mit Abhängigkeiten im digitalen Staat [White paper of ÖFIT]. <https://www.oeffentliche-it.de/documents/10181/14412/Digitale+Souveränität+als+strategische+Autonomie+-+Umgang+mit+Abhängigkeiten+im+digitalen+Staat>; Henning Kagermann, Karl-Heinz Streibich, Katrin Suder (2021): Digital Sovereignty – Status Quo and Perspectives [Acatech Impulse Paper]. Download: <https://www.acatech.de/publikation/digitale-souveraenitaet-status-quo-und-handlungsfelder/>

report no or only moderate effects of the pandemic on research IT. In some cases, higher demand is cited in the areas of research data management, high-performance computing and machine learning.

The services for working from home were expanded and new hardware, especially notebooks, was procured. In some cases, new architecture and security concepts were developed for mobile working. Due to the increased effort for training and support, personnel bottlenecks in these areas have become more visible. Overall, it is emphasised that home office works well – even in areas where it seemed unthinkable before. Through online collaboration, the interaction between employees has changed in a predominantly positive way. They report more communication, more efficient meetings, more creativity, fewer concerns and more structured project management. On the other hand, leadership and management are described as more time-consuming and difficult.

Most universities have extensively enhanced their own systems for online teaching. Not only have many new services been put into operation, but existing services have also been scaled and expanded for intensified use. Video conferencing systems are mentioned here most frequently. Specified by name are the solutions BigBlueButton, Flowcast, Jitsi, Microsoft Teams, Matrix, Nextcloud Talk, OnlyOffice, OpenCast Studio, Overleaf, RocketChat, Seafile, Cisco WebEx and Zoom. The strategy for these systems will be re-evaluated in many institutions after the pandemic. Most academic IT facilities also indicate to operate two or more video conferencing systems for different scenarios.

The most relevant aspects with regard to teaching services and technologies:

Most frequent mentions	Mentions
Scaling of the services	15
Online teaching	14
Video conferencing systems	10
Many new services	8
More support and communication	7
Dynamisation of digitalisation	6
Contact tracing	4
Burdens for staff	3
Digital collaboration	3
Services for online exams	3
Lecture recording	3

The effort for support and communication has increased considerably for the IT centres. Examples mentioned in this context are the intensified debates on data protection and IT security issues as well as generally broader discussions on services and the capabilities of platforms. The increased use of services is also accompanied by increased demands on the quality of service provision. Completely new services were developed for contact tracking⁴ in presence and hybrid mode, whereby the universities are pursuing very different approaches to implementation. Furthermore, collaboration solutions, services for online exams and video recordings are mentioned. At large, a clear dynamisation of digitisation at the IT facilities and a lot of time pressure overall are reported, which has also led to a considerable additional workload for staff.

In addition to the many services to be established and expanded, the ECJ ruling Schrems II has brought about significant changes. The institutions are reviewing their own services in this regard, reassessing and describing fundamental effects on sourcing and operating strategies. In this context, a significant increase in the workload for coordinating security concepts and DPAs is reported, as well as a professionalisation of processes.

⁴ See also Malte Dreyer, Hartmut Hotzel (2020): Umfrage zum Thema Kontaktverfolgung an Hochschulen im September 2020 durch den ZKI-Arbeitskreis Strategie & Organisation. <http://doi.org/10.5281/zenodo.4045311>

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Author biographies

Malte Dreyer is the director of the IT centre (CMS – Computer and Media Service) of Humboldt-Universität zu Berlin, Germany. Before he was director for the department of research and development at Max Planck Society, Max Planck Digital Library. He designed and developed research and publication data infrastructure for the Max Planck Society's institutes, as well as many research tools. Providing advice on software and information architecture, he is a member of several technical boards. Malte Dreyer's interests now are in the field of compliance and risk management, scalable information management architectures and infrastructures in the intersection of organizational perspectives on ICT from data centers and information management organizations. Current projects are in the fields of flexible sourcing strategies, compliance management, linguistics and research services management.



Dr. Maik Bierwirth is responsible for project development and third-party funding proposals at the Computer and Media Service of Humboldt-Universität zu Berlin, Germany. Before he worked in academic publishing, copyediting and cultural criticism. He obtained his doctorate in the humanities in the interdisciplinary graduate research programme "Automatisms. The emergence of structures beyond planned processes in culture, media and information technology" at the University of Paderborn. Current projects are in the fields of research data management, research services, information management, scholarly communication and digital sovereignty.

